John's experiment: Heating sand (ID#063.02-e06)

John wishes to answer the following question: "Does heating two different types of sands (black and white sand) equally cause the same change in temperature to occur?" He created the following hypothesis.

Hypothesis: Black sand and white sand are different substances. If they are heated equally, the temperature changes for the black and white sand will be different.

Do you agree or disagree with John's hypothesis? Provide a reason to support your decision.

Step 1 White Black Sand Sand 100 g 200 g White Sand **Black Sand** Obtain a 100 g sample of white sand and Measure and record the initial temperatures of the two samples Step 4 Black White Sand Heat the black sand using the same heat Heat the white sand for a while, then source, then measure the resulting measure the resulting temperature. temperature. White **Black** Sand Sand inital temperature temperature temperature Compare the temperature changes in white sand and black sand.

John designed an experiment to determine if the same amount of energy transferred causes the same temperature change in different types of sands. However, John's teacher found **two** mistakes with John's procedure.

Look at the procedure to the right. Describe **two** ways you would change John's procedure and explain why those changes are needed.

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